

Meeting the Needs of the Future Force: Transforming Air Support for the Unit of Action

**A Monograph
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ABSTRACT

MEETING THE NEEDS OF THE FUTURE FORCE: TRANSFORMING AIR SUPPORT FOR THE UNIT OF ACTION by Major Lee H. Marsh, Jr., United States Air Force, 51 pages.

The Army is in the midst of a significant transformation into the Future Force. The purpose of this transformation is to provide the right kind of forces for the needs of the future. By the year 2010, the current Army organizational structure will be transformed into Units of Employment and Units of Action. The purpose of this monograph was to determine whether the current air support system would meet the needs of the Future Force's Unit of Action. The hypothesis was that the current air support system could meet the needs of the Unit of Action.

The analysis in this monograph compared the current air support system to the requirements of the Unit of Action to ascertain a satisfactory level of performance based on the criteria of suitable, feasible and acceptable. In order to compare the current air support system to the Unit of Action requirements, three functional categories were established. These functional categories were battle command, fire support and airspace command and control. These functional categories allowed for an objective comparison of two dissimilar systems.

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The three identified shortfalls were: (1) the need for a physical location for the ALO within the design of the Unit of Action's Mobile Command Group or Tactical Command Post; (2) the Air Liaison Officer's need to be able to collaboratively plan with interagency or multi-national organizations; and (3) the transient need for the Tactical Air Control Party to assume the duties of an Air Support Operations Center under certain situations. The one concern was that the Networked Fires concept was inadequately defined in Unit of Action documents. Specifically, the two issues requiring further analysis were (1) at what tactical echelon man-in-the-loop procedures were required and (2) what were the man-in-the-loop specific procedures.

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The ideas and views expressed in this paper are those of the author and do not necessarily reflect the official policy or position of the Command General Staff College, the School of Advanced Military Studies, or Department of the Army.

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CHAPTER ONE

INTRODUCTION

"Experience also shows that armed forces, not only of the United States but of other nations, have been slow to hammer out the necessary procedures. Often corrective steps have been achieved only after many failures in battle. In no area of interservice operations has this phenomenon been more pronounced than in the matter of close air support."¹

Case Studies in the Development of Close Air Support

The United States Army is in the process of transforming itself to meet the future needs of the United States. The importance of this transformation is evident by the emphasis it has been given by the previous Army Chief of Staff, General Shinseki, and the current Chief, General Schoomaker. General Schoomaker has changed the name of the transformed Army from the Objective Force (OF) to the Future Force (FF).² However, General Schoomaker has not changed the focus of the transformation, which are "lighter, more responsive fighting forces for 2010 and beyond...."³ In fact, General Schoomaker has been quoted as saying, "We are going to move from the current force to the future force ... now."⁴

The purpose of the Army's transformation to the Future Force is to provide the right kind of forces for the needs of the future. The FF does not use the current Army unit structure. In the place of corps, divisions, brigades and battalions are Units of Employment (UE) and Units of

¹ Cooling, Benjamin Franklin, ed. *Case Studies in Close Air Support*. Washington, D.C. Office of Air Force History, 1990, 535.

² Cox, Matthew. "'Objective Force' likely to be known as the 'Future Force.'" Defense News Media Group, 23 Sep 03, http://www.defensenews.com/conferences/0903frc/frc_2237958.html.

³ Ibid.

⁴ "New Army Chief to Speed up the Pace." Associated Press, 8 Oct 03, http://www.military.com/NewsContent?file=FL_army_100803

Action (UA).⁵ The transformed Army will blend many of the organizational duties between the UE and UA, which are more clearly delineated in the current force. The Army's goal is to avoid modifying the pre-existing system by starting with a new organization in order to create the most effective design.⁶ According to *TRADOC Pamphlet 525-3-0.1 The United States Army Objective Force Battle Command (C4ISR) Concept*, "the organization and behavior of these elements within the Objective Force will be different - in some cases radically so."⁷

This monograph questions whether the current air support system is able to meet the needs of the FF. Since the Army is fully committed to the FF, will the Air Force air support system need to transform to integrate into this FF? The purpose of this monograph is to look at a portion of the FF, the UA, to analyze what kind of air support system the UA will require. In introducing the topic, this chapter will discuss: the scope of the study, the methodology for analyzing the monograph's topic, and identify the assumptions, limitations and criteria.

An UA is not a brigade, but a unit with a new organizational structure and an increased capability. Therefore, the scope of this study with respect to the current air support system must extend beyond that of a brigade's. An explanation of the full spectrum of current air support operations is necessary to provide a valid comparison of roles for providing air support to the future UA when compared to today's air support system. The UA may require what traditionally have been corps or division specific roles and functions. However, in order to test UA requirements against today's air support system, a hypothesis is necessary.

This monograph hypothesizes that the current air support system can meet the needs of the UA. To test this hypothesis, a comparative analysis will be used. Analysis will compare the

⁵ U.S. Department of the Army. *The Objective Force in 2015 White Paper*. Washington D.C.: U.S. Department of the Army, 2002, 1.

⁶ Ibid, 5.

⁷ U.S. Department of the Army, TRADOC Pamphlet 525-3-0.1 *The United States Army Objective Force Battle Command Concept (C4ISR) Concept*. Fort Monroe, VA: U.S. Army Training and Doctrine Command, 2002, 4.

current air support system against future air support requirements for the UA. Specifically, the UA air support requirements will be the monograph's baseline of acceptable support. The current force's air support system will be compared to this baseline and an evaluation of performance will be established based on standard criteria. The comparative evaluation will identify any differences between the current air support system and the requirements for air support of the UA. From these differences, an assessment of criticality will be made. Any unfulfilled requirement considered critical, will invalidate the monograph's hypothesis. The critical unfulfilled requirements will then be identified as shortfalls to be further analyzed for ways to eliminate or reduce.

Each individual chapter will focus on one aspect of the comparative analysis process. Chapter Two will discuss the air support system that supports the current force. Chapter Three will then discuss the characteristics of the UA. With the background information provided by Chapters Two and Three, Chapter Four will then analyze the current air support system in support of the UA requirements to ascertain if there are any potential shortfalls. Chapter Five will then take these results and develop recommendations to correct or reduce any identified shortfalls. Even under the most objective analysis, there are assumptions made. This is also true for this monograph.

This monograph makes two significant assumptions. First, this monograph does not assume that the UE has the same duties as a corps or division and that the UA does not have the same duties as a brigade. The transforming Army is blending many of the organizational duties between the UE and UA that are more clearly delineated in the current force. This necessitates including the full spectrum of current air support operations to provide a valid comparison of roles for providing air support to the UA when compared to the current force. Second, this monograph assumes there will still be an air support requirement for the UA and Air Force personnel in an Air Force organization will fill this requirement.

Just as significant as the assumptions are the limitations. There are two identified limitations. First, the UA requirements are written specifically focused on the UA and not from the perspective of Air Force air support. Because of this, the Air Force related air support requirements are derived from UA documents. Second, the UA concept is evolving and will continue to change. While this does not invalidate the value of this monograph, this monograph represents a snapshot of requirements based on the most recent UA documents, which are subject to change.

Establishing the criteria used to analyze the differences between the current air support system and future requirements is the last topic of this chapter. These criteria are needed in order to establish a standard for assessing the ability of the current air support system to meet the needs of the UA. The criteria selected are those in *FM 5-0* under "Course of Action Development." These criteria are: Suitable, Feasible and Acceptable.⁸

There were two reasons for selecting these criteria for this monograph. First, they are an established standard within the Army Military Decision Making Process (MDMP) for Course of Action (COA) development. This monograph's hypothesis states that the current air support system can meet the needs of the UA. This hypothesis, in essence, defines a COA. Therefore, the criteria used within the MDMP process were considered appropriate for this monograph's proposed COA as well. Second, the criteria of suitable, feasible and acceptable are broad enough to allow the definitions of each to be tailored to best fit the requirements of the monograph's subject. The final discussion in this chapter provides the definitions for the criteria; developed in context to the monograph's subject.

⁸ U.S. Department of the Army. *Field Manual 5-0 Army Planning and Orders Production Final Draft*. Washington, D.C.: Headquarters, Department of the Army, 2002, 3-23.

According to *FM 5-0*, suitability "must accomplish the mission and comply with the commander's guidance."⁹ For the purposes of this monograph, suitability means that the current air support system must be able to accomplish the missions of the UA and comply with direction within the Battle Command framework of the UA. Feasible, as defined by *FM 5-0*, is "The unit must have the capability to accomplish the mission in terms of available time, space, and resources."¹⁰ This definition of feasibility remains the same. This monograph assumes as the primary COA that the current air support system can support the UA. Measuring time, space and resources serve as sound validations of feasibility. For the last criterion, acceptability, *FM 5-0* states that, "The tactical or operational advantage gained by executing the COA must justify the cost in resources, especially casualties. This assessment is largely subjective."¹¹ Since the hypothesis is based on a COA that accepts the current air support system, the perspective for assessing acceptability will depend on assessing whether any aspects of the current system are unacceptable.

Unacceptability will be used to judge the extent of advantage lost, or disadvantage, by keeping the current air support system. In this manner, the amount of disadvantage is measured to ascertain unacceptability. For each difference discovered, an appropriate measurement and a threshold of unacceptability will be established. If an identified disparity between the current air support system and UA requirements exceeds the threshold, then the disparity is unacceptable.

Unless the FF's requirements for air support are not identified and addressed now, the current air support system may not be prepared to meet the requirements of the FF. Ideally, the goal of the Air Force air support system should be to transform parallel to the FF. But to do so, a

⁹ U.S. Department of the Army. *Field Manual 5-0 Army Planning and Orders Production Final Draft*. Washington, D.C.: Headquarters, Department of the Army, 2002, 3-23.

¹⁰ Ibid, 3-23.

¹¹ Ibid, 3-23.

careful analysis of the requirements and the capabilities of the FF is necessary to better understand what will be required of the Air Force air support system in the future and whether any change is even necessary. With the understanding that a change may not even be necessary, the next chapter examines the current air support system.

CHAPTER 2

THE CURRENT LEGACY FORCE AIR SUPPORT SYSTEM

This chapter has two purposes, first to familiarize the reader with the current air support system in order to provide a basis for comparison when discussing the needs of the Future Force's Unit of Action. Second, this chapter will derive three functional categories, which encompass the principal roles and duties of the current air support system. These functional categories will be used in subsequent chapters to categorize UA requirements. This enables a valid comparison between the functional categories of the current air support system and the requirements of the UA.

This chapter will elaborate in detail on the two primary components of the current air support system: the Tactical Air Control Party (TACP) and the Air Support Operations Center (ASOC). For both the TACP and the ASOC, the mission, roles, functions, personnel and their specific duties, and place in the Army organizational and command and control (C2) structure will be discussed.

THE TACTICAL AIR CONTROL PARTY

The most complete mission description of the TACP is in the latest edition of *JP 3-09.3, Joint Tactics, Techniques and Procedures for Close Air Support (CAS)*:

"The TACP is the principal Air Force liaison element aligned with Army maneuver units from BN through corps. The primary mission of corps through brigade-level TACPs is to advise their respective ground commanders on the capabilities and limitations of air power and assist the ground commander in planning, requesting, and coordinating CAS. The TACP provides the primary terminal attack control of CAS in support of ground forces."¹²

¹² Joint Chiefs of Staff. *Joint Publication 3-09.3 Joint Tactics, Techniques and Procedures for Close Air Support (CAS)*. Ft Monroe, VA: Joint Warfare Center, Doctrine Division, 2003, II-9.

To summarize the text from *JP 3-09.3*, what the TACP is essentially responsible for is air support liaison and control. The two most significant positions with respect to liaison and control are the Air Liaison Officer (ALO) and the Terminal Attack Controller (TAC). The ALO's role is primarily liaison with the Army commander and staff, while the TAC's role is primarily the control of aircraft.

THE AIR LIAISON OFFICER (ALO)

According to *AFTTP 3-1, Volume 26 Theater Air Control System*, "The ALO is a rated officer (author's note: flight qualified), who functions as the primary advisor to the ground commander on the capabilities and limitations of aerospace power, and is aligned with a ground maneuver unit."¹³ However, this description does not indicate the ALO's place in the Army staff structure nor does it provide the necessary details to best understand the duties of the ALO. Army *FM 101-5, Staff Organization and Operations*, provides better clarification of both these questions.

According to *FM 101-5*, an ALO is a special staff officer.¹⁴ "Special staff officers help the commander and other members of the staff in their professional or technical functional areas...Special staff sections are organized according to functional areas."¹⁵ For example, the fire support coordinator (FSCOORD) is also a special staff officer.

Each special staff officer is then assigned responsibility to one of the coordinating staff officers. In the case of both the ALO and the FSCOORD, the G3 or S3 (Operations) is the coordinating staff member responsible for their activities.¹⁶ Of particular relevance to this paper,

¹³ Air Warfare Center Directorate of Tactics. *AFTTP 3-1, Volume 26 Theater Air Control System*. (Unclassified Extract) Nellis AFB, NV. Air Warfare Center Directorate of Tactics, 2003, 5-4.

¹⁴ U.S. Department of the Army. *Field Manual 101-5 Staff Organizations and Operations*. Washington, D.C.: Headquarters, Department of the Army, 1997, 4-22.

¹⁵ *Ibid*, 2-3.

¹⁶ U.S. Department of the Army. *Field Manual 101-5 Staff Organizations and Operations*. Washington, D.C.: Headquarters, Department of the Army, 1997, 2-3.

the G3/S3 also has responsibility for staff planning and supervision of airspace command and control (AC2).¹⁷ With a clearer understanding of the ALO's place in the Army staff structure, a more detailed look at the specific responsibilities of the ALO is next.

FM 101-5 states that "The air liaison officer is the special staff officer responsible for coordinating tactical air assets and operations such as close air support (CAS), air interdiction, joint suppression of enemy air defenses (SEAD), reconnaissance, and airlift."¹⁸ *FM 101-5* then specifically details several specific responsibilities of the ALO. This list of responsibilities is provided in Table 2-1. From this list of responsibilities, it is apparent that the ALO is an integral part of planning, requesting and coordinating air support.

- Advises the commander and staff on the employment of tactical air (TACAIR). *BC*
- Operates and maintains Air Force TACAIR direction radio net and air request net. *BC*
- Transmits requests for immediate close air and reconnaissance support. *BC*
- Transmits advance notification of impending immediate airlift requirements. *BC*
- Coordinates tactical air support missions with the fire support element and the appropriate AC² element. *FS/AC2*
- Recommends IR to the G2 through the G3. *FS*
- Acts as liaison between AD units and air control units. *AC2*
- Helps plan the simultaneous employment of air and surface fires. *FS*
- Supervises forward air controllers (FACs) and the TACP. *BC*
- Integrates air support sorties with the Army unit scheme of maneuver. *BC*
- Participates in targeting meetings. *FS*
- Serves as a member of the targeting cell. *FS*
- Helps the fire support officer (FSO) direct air strikes in the absence of a FAC. *FS*
- Provides Air Force input into the AC². *AC2*

Table 2-1: ALO Specific Responsibilities, *FM 101-5 Staff Organization and Operations*¹⁹

Upon further analysis of the responsibilities in Table 2-1, the ALO's responsibilities can be grouped into three separate functional categories based on the ALO's specific duties and

¹⁷ U.S. Department of the Army. *Field Manual 101-5 Staff Organizations and Operations*. Washington, D.C.: Headquarters, Department of the Army, 1997, 4-13.

¹⁸ Ibid, 4-22.

¹⁹ Ibid, 4-22.

associations with other elements of the staff. These functional categories are Battle Command (BC), Fire Support (FS) and Airspace Command and Control (AC2). In table 2.1, following each specific responsibility, is a designation of that responsibility into one or more of the three functional groups. A more detailed discussion on each functional group follows.

According to *FM 3-0 Operations*, "Battle command is the exercise of command in operations against a hostile, thinking enemy."²⁰ *FM 101-5* further elaborates on the importance of the staff to the commander by stating, "The staff is the most important resource that the commander uses to exercise command and control when the commander cannot exercise command and control by himself."²¹ The ALO exercises battle command in two ways. First, as a member of the Army commander's staff, the ALO derives the authority to exercise command and control when necessary. Second, the ALO as the senior member of the TACP exercises battle command by the execution of distributed air through the supervision of the subordinate TACPs.

The second function, Fire Support, is defined in part in FM 3-0 as including "the collective and coordinated use of target acquisition data, indirect fire weapons, fixed-wing aircraft, electronic warfare, and other lethal and nonlethal means to attack targets."²² The ALO is a member of the Fire Support Cell. This is because of the required coordination with the Fire Support Element (FSE) and Fire Support Officer (FSO) as well as involvement in the targeting process to include reconnaissance and infrared (IR) coordination. This is further supported by referencing *FM 6-20-10 Tactics, Techniques, and Procedures for The Targeting Process*. *FM 6-*

²⁰ U.S. Department of the Army, *Field Manual 3-0 Corps Operations*. Washington, D.C.: Headquarters, Department of the Army, 2001, 5-1.

²¹ U.S. Department of the Army. *Field Manual 101-5 Staff Organizations and Operations*. Washington, D.C.: Headquarters, Department of the Army, 1997, 1-1.

²² U.S. Department of the Army, *Field Manual 3-0 Operations*. Washington, D.C.: Headquarters, Department of the Army, 2001, 5-16.

20-10 indicates that the ALO works with the FSE at the corps and division level and as a part of the targeting team at the brigade level.²³

The third function, Army Airspace Command and Control (A2C2), is defined in *FM 101-5-1 Operational Terms and Graphics* as, "The Army's application of airspace control to coordinate airspace users for concurrent employment in the accomplishment of assigned missions."²⁴ The ALO is a member of the Army Airspace Command and Control element at corps and division levels and as part of an "ad hoc" team at brigade level where, on a smaller scale, the coordination is essentially the same.²⁵ The airspace coordination includes air defense (AD) coordination as well, again at all levels from corps to brigade.²⁶ Figure 2.1 is a graphical representation of the Army Air Ground System portion of the Theater Air Ground System. This figure helps to illustrate the ALO's place (as the senior member of the TACP) within the Army organizational structure.

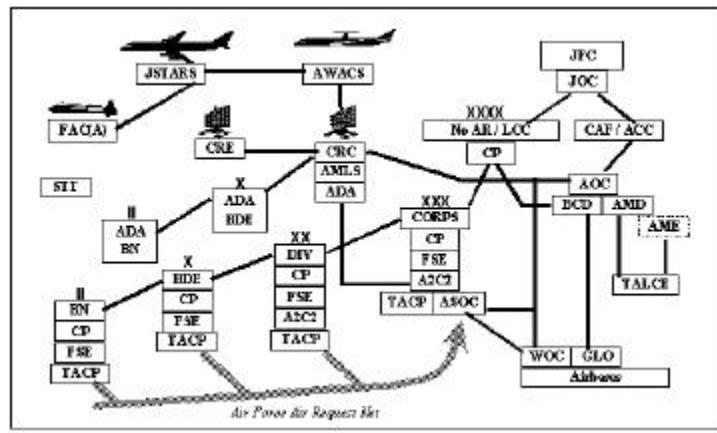


Figure 2-1: Army Air Ground System.²⁷

²³ U.S. Department of the Army, *Field Manual 6-20-10 Tactics, Techniques, Procedures for The Targeting Process*. Washington, D.C.: Headquarters, Department of the Army, 1996, 4-2, 5-2.

²⁴ U.S. Department of the Army, *Field Manual 101-5-1 Operational Terms and Graphics*. Washington, D.C.: Headquarters, Department of the Army, 1997, 1-11.

²⁵ U.S. Department of the Army, *Field Manual 3-52 Army Airspace Command and Control in a Combat Zone*. Washington, D.C.: Headquarters, Department of the Army, 2002, 3-5 to 3-7.

²⁶ Ibid, 3-5 to 3-7.

²⁷ Derived from Air Land Sea Application Center. *AFTTP (I) 3-2.17 Multiservice Tactics, Techniques, and Procedures for the Theater Air Ground System*. Langley AFB, VA: Air Land Sea Application Center, 2003, II-10.

THE TERMINAL ATTACK CONTROLLER

"The terminal attack controller is a member of the TACP who, from a forward ground or airborne position, controls aircraft in support of ground forces. Terminal attack controllers have the authority to direct aircraft delivering ordnance to a specific target cleared by the ground commander. Only specially trained and certified individuals are authorized to perform this duty."²⁸

Only ground TACs are members of the TACP. These individuals have traditionally been designated Enlisted Terminal Attack Controllers (ETAC). In the latest edition of *JP 3-09.3*, the term Joint Terminal Attack Controller (JTAC) is defined. A JTAC is a member from any service recognized by the Department of Defense as a qualified TAC.²⁹ For the purpose of this monograph, the term ETAC will represent an Air Force qualified ground-based controller who is a member of the TACP. The term JTAC will be used for any other type of ground-based controller.

In recent years, senior ETACs have served as battalion ALOs (BALO). This was done to provide a full-time ALO to a battalion. Before this change, the rated officer who served as a battalion's ALO performed those duties on temporary duty from their normal duty assignment with a fighter squadron.³⁰ However, in most circumstances where a TACP has both ALOs and ETACs, the ETACs will normally perform air control duties. Now, with a better understanding of the TACP and the two primary positions within the TACP, the ALO and TAC, the discussion will shift to the top of the air support system with a discussion of the ASOC.

²⁸ Air Land Sea Application Center. *AFTTP (I) 3-2.17 Multiservice Tactics, Techniques and Procedures for the Theater Air Ground System*. Langley AFB, VA: Air Land Sea Application Center, 2003. III-15.

²⁹ Joint Chiefs of Staff. *Joint Publication 3-09.3 Joint Tactics, Techniques and Procedures for Close Air Support (CAS)*. Ft Monroe, VA: Joint Warfare Center, Doctrine Division, 2003, Glossary-12.

³⁰ Air Warfare Center Directorate of Tactics. *AFTTP 3-1, Volume 26 Theater Air Control System*. (Unclassified Extract) Nellis AFB, NV. Air Warfare Center Directorate of Tactics, 2003, 5-5.

THE AIR SUPPORT OPERATIONS CENTER (ASOC)

"The ASOC is the primary control agency of the theater air control system (TACS) for the execution of air and space power in direct support of ground operations. Usually aligned with the senior army tactical level of command - normally the corps level - the ASOC coordinates and directs air and space support for land forces. It is also possible for the ASOC to be placed in a joint task force (JTF), acting in an operational level mission. Depending on the type of air component integration needed with special operations forces, an ASOC may be collocated with a joint special operations task force (JSOTF). The ASOC is responsible for the coordination and control of air component missions within its associated ground component's area of operation (AO).³¹

Three very important aspects of this definition of the ASOC warrant further elaboration.

First, the senior tactical level of command is normally a corps; however, the ASOC could be located with a "brigade, division, or an operational-level JTF headquarters, depending on the situation."³² Second, the types of missions the ASOC coordinates are predominately CAS, but not exclusively. The ASOC is responsible for integrating "aerospace operations within its assigned corps to include" CAS, air interdiction (AI), intratheater airlift, intelligence, surveillance and reconnaissance (ISR), suppression of enemy air defenses (SEAD), and combat search and rescue (CSAR).³³ Third, the ASOC has a significant coordination and control role. Quoting *AFTTP 3-1 Volume 26*, "Air missions that do not directly support the ground component but are flown inside the ASOC control area will normally be coordinated through the ASOC. This allows the ASOC to deconflict these missions with ground force maneuver and fires and to receive target and threat updates."³⁴ But often, the extent of coordination and control within the AO may be limited within the AO itself out of necessity. Again quoting *AFTTP 3-1, Volume 26*,

³¹ Air Warfare Center Directorate of Tactics. *AFTTP 3-1, Volume 26 Theater Air Control System*. (Unclassified Extract) Nellis AFB, NV. Air Warfare Center Directorate of Tactics, 2003, 4-1.

³² Ibid, 2003, 4-6.

³³ Air Land Sea Application Center. *AFTTP (I) 3-2.17 Multiservice Tactics, Techniques and Procedures for the Theater Air Ground System*. Langley AFB, VA: Air Land Sea Application Center, 2003. III-19.

³⁴ Air Warfare Center Directorate of Tactics. *AFTTP 3-1, Volume 26 Theater Air Control System*. (Unclassified Extract) Nellis AFB, NV. Air Warfare Center Directorate of Tactics, 2003, 4-1.

"This AO typically extends to the fire support coordination line (FSCL) for actual control of mission execution and may extend to the forward boundary for planning and advisory purposes."³⁵

Because the ASOC is normally aligned with the senior Army tactical level of command, the ASOC has a significant role in planning, coordinating and directing airpower within the AO.³⁶ In normal situations, the ASOC would collocate with the Army headquarters FSE.³⁷

"The FSE is responsible for fire support planning, coordination, integration, and synchronization of fires delivered on surface targets by all fire-support assets under the control, or in support, of the unit. As part of this responsibility, the FSE coordinates the airspace usage with the unit's A2C2 element collocated with the FSE."³⁸

Because the ASOC is aligned with the senior Army tactical level of command and is also collocated with the FSE, the same three functions attributed to the TACP can also be attributed to the ASOC. The ASOC functional categories are essentially those of battle command, fire support and airspace command and control, but at a higher echelon. Now, with a better understanding of the ASOC's place in the Army organizational structure, the discussion moves to the specific duties and functions of the ASOC.

According to *AFTTP 3-1 Volume 26*, the ASOC has seven cells, which include maintenance and operations functions.³⁹ Three of the seven cells are the core of the operational mission of the ASOC. These cells are the Command and Control (C2) Operations cell, the Exec Ops cell and the Combat Plans cell.⁴⁰ Within each cell there are several duty positions, however,

³⁵ Air Warfare Center Directorate of Tactics. *AFTTP 3-1, Volume 26 Theater Air Control System*. (Unclassified Extract) Nellis AFB, NV. Air Warfare Center Directorate of Tactics, 2003, 4-1.

³⁶ Joint Chiefs of Staff. *Joint Publication 3-09.3 Joint Tactics, Techniques and Procedures for Close Air Support (CAS)*. Ft Monroe, VA: Joint Warfare Center, Doctrine Division, 2003, II-9.

³⁷ *Ibid*, II-7.

³⁸ *Ibid*, II-9.

³⁹ Air Warfare Center Directorate of Tactics. *AFTTP 3-1, Volume 26 Theater Air Control System*. (Unclassified Extract) Nellis AFB, NV. Air Warfare Center Directorate of Tactics, 2003, 4-4.

⁴⁰ *Ibid*, 4-4.

two of these positions, the fighter duty officer (FDO) and fighter duty technician (FDT) require defining.

A FDO is a rated officer who is "responsible for executing operational functions in the ASOC."⁴¹ "FDOs process CAS requests, coordinate airspace control measures (ACM), and monitor the status of subordinate TACP units."⁴² The FDT is an ETAC or TACCS that has been trained for ASOC duties.⁴³ FDTs assist FDOs in the duties listed above as well as operate the Air Force Air Request Net (AFARN).⁴⁴ FDOs and FDTs have important roles within the C2 Ops and Exec Ops cells. A description of these two cells as well as the Combat Plans cell follows.

ASOC OPS CELLS

"The C2 Operations cell manages digital and voice receipt/coordination of the JTAR (author's note: Joint Tactical Air Strike Request)."⁴⁵ This is done by FDTs through the AFARN.⁴⁶ Referring back to Figure 2.1, the importance of the AFARN is apparent as the communications link between TACPs from battalions to the corps. The C2 operations cell also maintains status on the availability of air resources.⁴⁷ Although the method of linking battalion through corps has changed over the years from high frequency (HF) radio to digital satellite communications, the need for the network as a way to pass requests has not.

⁴¹ Air Warfare Center Directorate of Tactics. *AFTTP 3-1, Volume 26 Theater Air Control System*. (Unclassified Extract) Nellis AFB, NV. Air Warfare Center Directorate of Tactics, 2003, 4-2.

⁴² *Ibid*, 4-2.

⁴³ U.S. Department of the Air Force. *Air Force Instruction 13-113, Volume I Tactical Air Control Party (TACP) and Air Support Operations Center (ASOC) Training Program*, Washington, D.C.: Headquarters, Department of the Air Force, 2003, 8.

⁴⁴ Air Warfare Center Directorate of Tactics. *AFTTP 3-1, Volume 26 Theater Air Control System*. (Unclassified Extract) Nellis AFB, NV. Air Warfare Center Directorate of Tactics, 2003, 4-4.

⁴⁵ *Ibid*, 4-4.

⁴⁶ *Ibid*, 4-4.

⁴⁷ *Ibid*, 4-4.

The Exec Ops cell has a mix of FDOs, FDTs and an intelligence officer or technician.⁴⁸ The FDOs' main duties are to develop a CAS flow based on the air tasking order (ATO), match available aircraft to JTARs, monitor the air operations C2 net and coordinate with the Air Operations Center (AOC) or Wing Operations Center (WOC) for air assets.⁴⁹ The FDTs duties include managing "flight control and threat warning" and "provide procedural control of airborne assets of missions under ASOC control."⁵⁰ The intelligence officer/technician duties include maintaining liaison with Army intelligence, assessing threats and monitoring and maintaining the common operating picture (COP).⁵¹

The principle characteristics of the duties performed within the C2 operations and Exec Ops cells are focused on providing air support where and when it is needed. In the process of providing air support is the three functions of battle command, fire support and airspace command and control introduced previously. Battle command is represented by the command and control of the AFARN and of the air assets to provide air support for the ground commander. Fire support is evident due to the coordination necessary to determine whether an air asset is the best asset available, which is followed closely by the need to deconflict airspace to allow the air support to attack the target unhindered. The C2 operations and Exec Ops cells function to execute current operations. There is a separate cell, which does planning. That cell is the Combat Plans Cell.

⁴⁸ Air Warfare Center Directorate of Tactics. *AFTTP 3-1, Volume 26 Theater Air Control System*. (Unclassified Extract) Nellis AFB, NV. Air Warfare Center Directorate of Tactics, 2003, 4-4.

⁴⁹ Ibid, 4-4.

⁵⁰ Ibid, 4-4.

⁵¹ Ibid, 4-4.

ASOC PLANS CELL

The ASOC Combat Plans cell is normally manned from the corps TACP.⁵² The function of the Combat Plans cell is to "provide liaison with Army C2 cells external to the ASOC."⁵³ ALOs assigned to the corps TACP work with the Deep Operations Coordination Cell (DOCC) to attend targeting meetings, assist with targeting and preplanned CAS and AI nominations, track AI nominations through the targeting process and provide updates to the AOC and Battle Coordination Detachment (BCD).⁵⁴ A Combat Plans representative in G-3 operations advises the G-3 on "weight of effort decisions and notifying the ASOC immediately of weight of effort changes."⁵⁵ Essentially, the ASOC Combat Plans cell on the corps level has the same duties as an ALO would at the brigade level, but on a much larger scale. Before concluding this chapter, one last return to the three functional categories is necessary.

The functional categories of battle command, fire support and airspace command and control pertain to the entire TACP at the corps level. The corps ALO commands all subordinate TACPs. Therefore, as members of the corps ALO's staff, the members of the corps TACP provide battle command to subordinate TACPs. The corps ALO's staff also provide liaison to the DOCC as well as the G-3 providing both fire support and airspace command and control coordination.

An intentional underlying theme to this chapter was to consolidate the roles, duties and functions of the air support system into the three functional categories of battle command, fire support and airspace command and control. These three functional categories were derived in order to provide a basis of comparison between the current air support system and the

⁵² Air Warfare Center Directorate of Tactics. *AFTTP 3-1, Volume 26 Theater Air Control System*. (Unclassified Extract) Nellis AFB, NV. Air Warfare Center Directorate of Tactics, 2003, 4-4.

⁵³ Ibid, 4-4.

⁵⁴ Ibid, 4-5.

⁵⁵ Ibid, 4-5.

requirements of the UA. The next chapter will characterize the requirements of the Unit of Action (UA). These requirements were not written with the need for an air support system in mind. They were written to specifically describe the characteristics of the UA. In order to effectively analyze the requirements of the UA, the functional categories of battle command, fire support and airspace command and control will be used. Armed with a familiarity of the current air support system, the next topic of discussion is the Future Force's Unit of Action.

CHAPTER 3

CHARACTERISTICS OF THE UNIT OF ACTION (UA)

The purpose of this chapter is to describe the characteristics of the UA. This description focuses on the characteristics of the UA that fall into one of the functional categories developed in the last chapter. These functions are battle command, fire support and airspace command and control. The primary reason for using these three functions to categorize characteristics of the UA is to provide a common frame of reference with the current air support system. This is necessary since the integration of an air support system is not part of any current UA documents.

This chapter begins with a brief overview of the UE and the UA. The overview of the UE is to provide the reader with a better understanding of the FF in its entirety. Following the overview of the UE, a more detailed description of the roles, missions and functions of the UA is provided. The remainder of the chapter will then focus on the UA with respect to the three specific functional categories established in Chapter Two; battle command, fire support and airspace command and control. This chapter will not derive air support requirements, but will only describe characteristics of the three functional categories previously mentioned with respect to the UA. Chapter Four will take the requirements established in this chapter and assess whether the current air support system can meet those requirements. With this understanding, a brief overview of the UE and the UA is next.

OVERVIEW OF THE UNIT OF ACTION MISSION AND CAPABILITIES

Only under very specific circumstances will an UA conduct operations without the support of an UE. These specific circumstances are provided later in this chapter. Since the UA and UE are conceptually linked in future operations, a brief overview of the UE is provided in order to provide a better overall understanding of the FF concept of operations.

"UEs are tailorabile, higher-level echelons that integrate and synchronize Army, Joint and Multinational forces for full spectrum operations at higher tactical and operational levels of war. They link ground and joint forces and orchestrate

ground operations that decide joint campaigns. They will be organized, designed, and equipped to fulfill C2 functions as the ARFOR (author's note: Army Forces) Component, Joint Force Land Component Command (JFLCC), or the JTF. UE are the basis of combined arms, air-ground task forces. UEs resource and execute combat operations, designate objectives, coordinate with Joint, interagency, multinational (JIM), non-governmental agencies, employ long range fires, aviation, and sustainment all the while enabling C4ISR and tactical direction to UA.⁵⁶

In relation to the current force, the UE will replace the field army, corps and division in the organizational structure.⁵⁷ For the echelons below the UE, there is the UA.

The UA is "the tactical warfighting echelon of the OF and comprises echelons of brigade and below to fight tactical engagements to win battles."⁵⁸ Even though the UA is the equivalent in size to the current Army's brigade, the UA will have substantially more capability than today's brigade.⁵⁹ The UA will not be a fixed organization, but will be able to force tailor as required.⁶⁰ Under this operating concept, the UA will be able to expand with additional units to provide additional capabilities for specific missions. This is enabled by the command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) of the UA, which allows the UA to expand its span of control.⁶¹ For example, the UA can command and control up to six combined arms battalions.⁶² While a UA may normally be a part of UE or a

⁵⁶ U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 1-5.

⁵⁷ U.S. Department of the Army. *TRADOC Pamphlet 525-3-92 Objective Force Unit of Employment Concept Final Draft*. Fort Monroe, VA: U.S. Army Training and Doctrine Command, 2003, 6.

⁵⁸ U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 1-3.

⁵⁹ Ibid, 1-5.

⁶⁰ U.S. Department of the Army. *The Objective Force in 2015 White Paper*. Washington D.C.: U.S. Department of the Army, 2002, 6.

⁶¹ U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 1-5.

⁶² Ibid, 1-5.

JTF, an UA can also serve as an Army Forces (ARFOR) component headquarters for a JTF in a less demanding smaller scale contingency.⁶³

"The UA rapidly deploys anywhere in the world in 96 hours as a fully integrated combined arms force to conduct operations as part of either a Unit of Employment (UE) or a Joint Task Force. The UA conducts the full spectrum of military operations including deterrence, homeland security, stability operations, support operations, SSC (author's note: Small Scale Contingency) to restore peace and stability, global war on terrorism, and is optimized for the offense in MCO (author's note: Major Combat Operations). It is organizationally designed to conduct these operations in all types of terrain and in any weather condition."⁶⁴

The goal for the FF, including the UA, is to achieve full integration within the Army, with the other services and other government agencies.⁶⁵ The concept goes beyond integration. Integration is really the enabling function. The goal is to have complete interdependence.⁶⁶

"Developing, fielding, and employing Units of Action will require interdependence among systems within the FCS UA, UE, and joint forces. Interdependence implies that FCS units must rely on external means - provided by other objective force and joint force capabilities - to accomplish their missions. Connectivity is an essential enabler of interdependence. The needed connectivity can be provided only with a complex set of interfaces, doctrines, operating concepts, processes, training, communications, etc. - that enable a true network environment within and beyond the UA."⁶⁷

There are two specific examples that highlight the increased capability gained by the UA's connectivity and interdependence, from the individual soldier to the size of the UA's battlespace.

⁶³ U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 1-3.

⁶⁴ Ibid, 3-2.

⁶⁵ U.S. Department of the Army. *TRADOC Pamphlet 525-3-0.1 The United States Army Objective Force Battle Command (C4ISR) Concept*. Ft Monroe, VA: U.S. Army and Training and Doctrine Command, 2002, 21.

⁶⁶ Ibid, 21.

⁶⁷ U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 4-1.

In the Future Combat System (FCS) the soldier is also treated as part of the system.⁶⁸

Using the Land Warrior concept, the individual soldier will have "access to networked communications and the tactical internet."⁶⁹ This capability will enhance SA with a COP and will enable better battle command as each soldier is connected to the network, whether mounted or dismounted.⁷⁰ Also enabled by this unprecedented interconnectivity is the potentially large battlespace⁷¹ that the UA will be able to influence.

The UA "will conduct operations with a combat radius of 75km."⁷² More specifically, an UA's area of interest (AI) is assessed to be as large as a 75 kilometer radius.⁷³⁷⁴ For any complex terrain, the AI would shrink significantly. The ability to execute missions effectively within this battlespace is due in large part to the increased capabilities of the battle command concept for the UA, which is the first functional category for discussion.

⁶⁸ U.S. Department of the Army. *Operational Requirements Document for the Future Combat Systems*. Ft Knox, KY: Unit of Action Maneuver Lab, 2002, C-1.

⁶⁹ U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, E-2.

⁷⁰ Ibid, E-3, E-4.

⁷¹ U.S. Department of the Army, *Field Manual 101-5-1 Operational Terms and Graphics*. Washington, D.C.: Headquarters, Department of the Army, 1997, 1-18.
"Battlespace: The conceptual physical volume in which the commander seeks to dominate the enemy. It expands and contracts in relation to the commander's ability to acquire and or can change as the commander's vision of the battlefield changes. It encompasses three dimensions and is influenced by the operational dimensions of time, tempo, depth, and synchronization. It is not assigned by a higher commander nor is it constrained by assigned boundaries."

⁷² U.S. Department of the Army. *Operational Requirements Document for the Future Combat Systems*. Ft Knox, KY: Unit of Action Maneuver Lab, 2002, 37.

⁷³ U.S. Department of the Army, *Field Manual 101-5-1 Operational Terms and Graphics*. Washington, D.C.: Headquarters, Department of the Army, 1997, 1-10.
"Area of Interest: A geographical area wherein a commander is directly capable of influencing operations by maneuver or fire support systems normally under the commander's command or control. It includes both organic and supporting combat power, to include joint, multinational, or interagency assets."

⁷⁴ U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 4-9.

BATTLE COMMAND IN THE UNIT OF ACTION

Much like today's brigades, the "UA HQ provides C2, information management and communications to enable the UA command group to plan and execute missions."⁷⁵ However, the concept of operations for the UA differs from a traditional brigade in several areas. The two most significant differences, which affect air support operations, are the actual organizational design of the UA and the capabilities of the battle command network.

The organizational design of the battle command system consists of "two separate Mobile Command Groups (MCG) and a Tactical Command Post (TAC-CP)".⁷⁶ An MCG consists of a commander or deputy commander and a command group staff cell along with a security team.⁷⁷ The MCG has an ISR officer, Effects officer, Operations officer, Operations NCO and Sustainment officer.⁷⁸ Each MCG can "independently plan branches or collaboratively plan operations or sequels with the tactical command post."⁷⁹ The UA battle command system anticipates that the commander will be mobile and will fight the close fight within the MCG. The TAC-CP and the staff will be "located miles away from the physical battle."⁸⁰

As for the TAC-CP,

"The TAC-CP consists of a Command Integration Cell (CIC) that integrates and prioritizes the actions of the Information Superiority Cell (ISC), Fire and Effects Cell (FEC), Build and Sustain Combat Power Cell (BSCPC), and Maneuver and Support Cell (M&SC), which contains the Operational Maneuver Section. The

⁷⁵ U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 3-6.

⁷⁶ The acronym TACP is the Tactical Air Control Party in Air Force documents and most Army documents. The acronym TACP is the UA Tactical Command Post in most UA documents. In order to avoid confusion, the acronym TACP will represent the Tactical Air Control Party. The acronym TAC-CP will represent the UA Tactical Command Post.

⁷⁷ U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 3-6.

⁷⁸ Ibid, 4-22.

⁷⁹ Ibid, 4-22.

⁸⁰ Ibid, 4-22.

UA XO resides in the CIC and is overall responsible for the TAC-CP operation.⁸¹

The UA does not have the traditional stationary Tactical Operations Center (TOC). The UA's TAC-CP consists of six command and control vehicles (C2V), which are linked together and to the MCGs.⁸² These links allow the combination of the MCGs and TAC-CP to operate as a TOC while still retaining their mobility.⁸³ These links between the MCGs and the TAC-CP are indicative of a battle command network that is much more robust than any current versions.

In the approach to the UA battle command network, "each operator and organization has access to the same information compiled from all available sources."⁸⁴ Specifically what this means is that the UA will have connectivity with Army units, other services (joint), interagency and multi-national concerns with the potential of achieving complete interoperability.⁸⁵ There are obvious advantages to this level of interoperability, two of the most significant being mission planning and situational awareness.

The UA networked interoperability enables collaborative planning. Collaborative planning allows dispersed participants with a common situational awareness to develop a common course of action.⁸⁶ This collaborative planning concept has enabled the En-route Mission Planning and Rehearsal (EMPR) capability.⁸⁷ "EMPR provides situational awareness, joint planning, rehearsal, and execution tools for warfighters within and between all echelons. The capability exists at Home Station, en-route to, within, and redeploying from the JOA."⁸⁸

⁸¹ U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 3-6.

⁸² Ibid, 4-22.

⁸³ Ibid, 4-22, 4-30.

⁸⁴ Ibid, H-1.

⁸⁵ Ibid, 4-25.

⁸⁶ Ibid, 4-23.

⁸⁷ Ibid, 4-23.

⁸⁸ Ibid, 4-23.

What makes the EMPR effective is the ability to plan in transit to the JOA while maintaining situational awareness of the operating environment. In addition to enabling collaborative planning, interoperability also enables increased situational awareness.

Interoperability allows the UA to access external joint and national ISR assets as well as their own organic assets.⁸⁹ The UA has access to the common operational picture (COP) including the Single Integrated Air Picture (SIAP).⁹⁰ This increased situational awareness has the added benefit of providing a three dimensional picture of the battlefield to include all friendly forces. With the added "wide area coverage" that the external sensors provide the UA, organic assets can be cued "to obtain targeting information or fill in intelligence gaps."⁹¹ These sensors can then link to the shooters, including any UA, UE or Joint fires asset, which introduces the next functional category: Fire Support.⁹²

FIRE SUPPORT IN THE UNIT OF ACTION

The most significant impact of interoperability on UA fires is the concept of networked fires. Just like the sensor links that provide potential targets, these same links enable the concept of networked fires.

"the triad of relevant sensors, effects capabilities and battle command that enables the dynamic, on-demand application of lethal and non-lethal destructive, suppressive, protective and special purpose effects to achieve the commander's tactical and operational objectives."⁹³

⁸⁹ U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 6-14.

⁹⁰ Ibid, 4-27.

⁹¹ Ibid, 4-33.

⁹² Ibid, 4-56.

⁹³ U.S. Department of the Army. *TRADOC Pamphlet 525-3-0.1 The United States Army Objective Force Battle Command (C4ISR) Concept*. Ft Monroe, VA: U.S. Army and Training and Doctrine Command, 2002, 79.

Networked fires will leverage all Army, joint, national and multinational sensors "to locate and strike targets" by "exploiting the capabilities of the entire force."⁹⁴ The networked fires concept requires integration of sensors and shooters from theater assets to tactical ones.⁹⁵ What enables the tactical commander to utilize this capability effectively is a largely automated system.

"Networked Fires provides automated planning, coordination, and execution tools that allow the commander to focus on mission, tasks and purpose for fires and effects."⁹⁶ "The commander determines the operational objectives and the Networked Fires system applies effects-based solutions to achieve them."⁹⁷ Based on the commander's objectives and constraints, Networked Fires will determine targets, the effects system to use and attack as required.⁹⁸ With this kind of capability, Networked Fires will instigate changes in fire and effects coordination as well.

Perhaps the most significant ramification of Networked Fires will be the "separation of fires and effects coordination from the command and control of effects delivery platforms."⁹⁹ "Networked Fires will make most real-time engagement decisions."¹⁰⁰ Under this operating method, Networked Fires would designate the sensor-to-shooter link.¹⁰¹ This will require a

⁹⁴ U.S. Department of the Army. *TRADOC Pamphlet 525-3-0.1 The United States Army Objective Force Battle Command (C4ISR) Concept*. Ft Monroe, VA: U.S. Army and Training and Doctrine Command, 2002, 79.

⁹⁵ Ibid, 79.

⁹⁶ Ibid, 80.

⁹⁷ Ibid, 79.

⁹⁸ Ibid, 79.

⁹⁹ U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 4-59.

¹⁰⁰ Ibid, 4-59.

¹⁰¹ U.S. Department of the Army. *TRADOC Pamphlet 525-3-0.1 The United States Army Objective Force Battle Command (C4ISR) Concept*. Ft Monroe, VA: U.S. Army and Training and Doctrine Command, 2002, 79.

delegation of control down to the Fires Cells.¹⁰² However, there are situations that will require a more careful management of the sensor-to-shooter link and that guidance must be established.

These man-in-the-loop situations can occur for a variety of reasons; however, the most likely would be in situations where the established guidance is violated or additional input is required.¹⁰³ For example, attacking a particularly significant target is essential to the UA's COA.¹⁰⁴ This could require "establishing a direct information link from a target acquisition asset to a dedicated fires platform to engage the target."¹⁰⁵ However, whether the target acquisition and subsequent attack is accomplished automatically or with a man-in-the-loop, there is a capability requirement to have direct access to fire delivery systems.

This capability requirement states that the UA "Have direct access to Army and Joint fire delivery systems from external sources to provide extended range, networked, responsive precision or volume fires on demand in support of tactical maneuver."¹⁰⁶ This same capability requirement goes on to include the ability to apply CAS on demand.¹⁰⁷ However, what is omitted from the capability requirements is at what level of the UA this capability should reside.

The *Operational Requirements Document for the Future Combat Systems* states that the UA have the "Ability to dynamically manage direct fire at the company and below level."¹⁰⁸ Regarding the interoperability of the UA with joint sensors and fires and effects, the same

¹⁰² U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 4-59.

¹⁰³ U.S. Department of the Army. *TRADOC Pamphlet 525-3-0.1 The United States Army Objective Force Battle Command (C4ISR) Concept*. Ft Monroe, VA: U.S. Army and Training and Doctrine Command, 2002, 79.

¹⁰⁴ U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 4-59.

¹⁰⁵ Ibid, 4-59.

¹⁰⁶ Ibid, 6-15.

¹⁰⁷ Ibid, 6-15.

¹⁰⁸ U.S. Department of the Army. *Operational Requirements Document for the Future Combat Systems*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2002, A-13.

document states that "Interoperability must facilitate the rapid exchange of data essential for targeting and attack to include coordination and control requirements."¹⁰⁹ This is further emphasized as essential to UA operations and that "Data exchange must facilitate the expeditious application of Joint capabilities at the lowest tactical echelon without lengthy coordination."¹¹⁰ However, at what specific tactical echelon joint interoperability must occur is not specified, even though the need to do so rapidly is emphasized.

The capability to provide "responsive effects on demand" is identified as the most important function in the continuous integration of Networked Fires with maneuver and support.¹¹¹ Effective integration of fires and maneuver creates a synergistic effect. The fires and effects cause the enemy to move thereby exposing themselves to the maneuver forces.¹¹² Ultimately what Networked Fires provides the UA is rapid, coordinated fires and effects. For the UA this also requires airspace coordination.

AIRSPACE COMMAND AND CONTROL IN THE UNIT OF ACTION

By necessity, Networked Fires require a significant amount of airspace control within the UA's battlespace to quickly and effectively clear for fires and effects. The "unprecedented number of manned and unmanned airspace users" compounds this requirement.¹¹³ Before continuing with the specifics of the level of AC2, a brief description of the types of assets organic to the UA that affect the airspace will be discussed.

¹⁰⁹ U.S. Department of the Army. *Operational Requirements Document for the Future Combat Systems*. Ft Knox, KY: Unit of Action Maneuver Lab, 2002, A-16.

¹¹⁰ Ibid, A-16.

¹¹¹ U.S. Department of the Army. *TRADOC Pamphlet 525-3-0.1 The United States Army Objective Force Battle Command (C4ISR) Concept*. Ft Monroe, VA: U.S. Army and Training and Doctrine Command, 2002, 80.

¹¹² U.S. Department of the Army. *Operational Requirements Document for the Future Combat Systems*. Ft Knox, KY: Unit of Action Maneuver Lab, 2002, 15.

¹¹³ Ibid, A-14.

In many respects, the categories of assets are not much different than today. However, the improved capabilities of these assets has significant impact on the third dimension. To begin, the non-line of sight (NLOS) systems include mortar, cannon and a launch system (LS). The methods for deconflicting airspace for mortars and cannon are well established. However, the NLOS LS has two extended range, precision attack munitions that pose new problems in AC2.¹¹⁴ The Precision Attack Munition (PAM) will eventually engage targets out to 60 kilometers.¹¹⁵ The Loiter Attack Munition (LAM) will eventually engage targets out to 100 kilometers.¹¹⁶ Both munitions will have man-in-the-loop terminal control.¹¹⁷

Much like the LAM, the UA UAVs have a significant loiter capability. There are four classes of UAVs in the UA.¹¹⁸ A summary of their specific capabilities, at what UA echelon they are used and how many the UA is equipped with is provided in the appendix. Of significance is not only the large numbers of the smaller classes, but of the operating time and altitudes of the largest Class IV UAV. The Class IV UAV operates above 6500 feet above ground level (AGL) for 18 to 24 hours and can range as far as 400 kilometers away.¹¹⁹

The Class IV UAVs are operated by the aviation squadron, which was to have 12 RAH-66 Comanche helicopters.¹²⁰ Recent Army aviation restructuring has eliminated the Comanche program.¹²¹ However, a reasonable assumption is that the UA's Aviation Squadron will still have a rotary wing squadron of some type.

¹¹⁴ U.S. Department of the Army. *Operational Requirements Document for the Future Combat Systems*. Ft Knox, KY: Unit of Action Maneuver Lab, 2002, 18.

¹¹⁵ U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 6-15.

¹¹⁶ Ibid, 6-15.

¹¹⁷ Ibid, 6-15.

¹¹⁸ Ibid, 3-53.

¹¹⁹ Ibid, 3-55.

¹²⁰ Ibid, 3-76.

¹²¹ U.S. Department of the Army, *U.S. Army News Release: Army Announces Initial Results of Aviation Review*, Washington, D.C.: Army Public Affairs, 2004. [Online] Available http://www4.army.mil/ocpa/print.php?story_id_key=5696

All the assets described above are organic to the UA. With the addition of any Joint or Multinational air assets, it is apparent that the airspace portion of the UA's battlespace can be crowded. Combine the preponderance of air assets with the requirement to enable Networked Fires to respond rapidly, creates the additional requirement of providing AC2 within the UA's battlespace. "Airspace control is provided to prevent fratricide, enhance air defense operations, and permit a greater flexibility of operations."¹²²

The capability to provide AC2 begins with interoperability. This provides the single integrated air picture (SIAP) portion of the COP. However, this is just the beginning of the UA's tactical airspace management requirements.

"The purpose of the A2C2 (author's note: Army Airspace Command and Control) portions of the C4ISR network is to provide the common asset visibility, control, procedural coordination, synchronization, and regulation for Army and Joint manned and unmanned aerial assets, indirect fire munitions (LAM, PAM and conventional) and other airspace users."¹²³

One significant point regarding the purpose of the Army AC2 described above is that it stops short of using positive control within the UA's battlespace.¹²⁴ However, *TRADOC Pamphlet 525-3-0.1 The United States Army Objective Force Battle Command (C4ISR) Concept*, identifies as a requirement the ability of the UA AC2 to provide "positive and procedural control measures."¹²⁵

¹²² U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 4-27.

¹²³ Ibid, 4-27.

¹²⁴ Joint Chiefs of Staff. *Joint Publication 3-52 Doctrine for Joint Airspace Control in the Combat Zone*. Ft Monroe, VA: Joint Warfare Center, Doctrine Division, 1995, Glossary-7.
"Positive Control: A method of airspace control that relies on positive identification, tracking, and direction of aircraft within an airspace conducted with electronic means by an agency having the authority and responsibility therein."

¹²⁵ U.S. Department of the Army. *TRADOC Pamphlet 525-3-0.1 The United States Army Objective Force Battle Command (C4ISR) Concept*. Ft Monroe, VA: U.S. Army and Training and Doctrine Command, 2002, A-14.

The reason for emphasizing this point is that positive control usually requires a much more robust AC2 presence in both equipment and specialized personnel than procedural control.¹²⁶

The UA has both the equipment and the personnel to provide positive control within its airspace. Quoting TRADOC Pamphlet 525-3-90,

"The UA is designed to operate in the most or least restrictive A2C2 environments. The UA Fires and Effects Cell include a Forward Air Traffic Control crew and an ADAM (author's note: Air Defense and Airspace Management) crew that can integrate directly with UE, civilian and Joint Airspace Management and Joint Integrated Air Defense Systems (JIADS) C2 facilities as required."¹²⁷

This level of AC2 in a brigade size UA is unprecedented. The larger impact of this capability is that the UA can positively control the assets using the airspace portion of its battlespace. This enables the UA to "Deconflict, synchronize and integrate all air-ground operational requirements with fires in time, space and altitude throughout the JOA."¹²⁸

With this understanding of the capability of the UA's AC2, this chapter describing the significant characteristics of the UA is complete. This chapter divided the characteristics of the UA into the three functional categories of battle command, fire support and airspace command and control. These same functional categories were derived from an analysis of the current air support structure in Chapter Two. Now, with an understanding of the current air support system and the requirements of the UA, the next chapter will assess whether the current air support system can meet the requirements of the UA.

¹²⁶ Joint Chiefs of Staff. *Joint Publication 3-52 Doctrine for Joint Airspace Control in the Combat Zone*. Ft Monroe, VA: Joint Warfare Center, Doctrine Division, 1995, Glossary-7.
"Procedural Control: A method of airspace control which relies on a combination of previously agreed and promulgated orders and procedures."

¹²⁷ U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 4-27.

¹²⁸ Ibid, 4-27.

CHAPTER 4

UNIT OF ACTION REQUIREMENTS AND THE CURRENT AIR SUPPORT SYSTEM

The purpose of this chapter is to take the significant characteristics of the UA, as described in the last chapter, and analyze these characteristics with respect to the current air support system. The objective is to determine whether the current air support system is capable of supporting the UA. To facilitate this analysis, Chapters Two and Three categorized the functions of the current air support system and the characteristics of the UA into the three functional categories of battle command (BC), fire support (FS) and airspace command and control (AC2) to provide a common frame of reference.

Within each functional category, requirements for the UA will be established, then analyzed for suitability, feasibility and acceptability based on using the current air support system. For the sake of brevity, only requirements that fail to pass suitability, feasibility or acceptability will be analyzed in detail. Any criteria failures will then be considered a shortfall and discussed further in Chapter Five.

The *Operational Requirements Document for the Future Combat Systems* stipulates for the FCS family of systems that there will be no increase in force structure required.¹²⁹ This same restriction will apply to the current air support system in assessing whether it meets the requirements of the UA. This restriction is necessary in order to prevent substituting numbers of additional personnel to disguise a legitimate inadequacy in air support. The analysis begins with the first functional category, battle command.

¹²⁹ U.S. Department of the Army. *Operational Requirements Document for the Future Combat Systems*. Ft Knox, KY: Unit of Action Maneuver Lab, 2002, 58.

BATTLE COMMAND

In Chapter Three, there were two significant differences between the UA and a traditional brigade identified that could potentially impact air support operations. They were the organizational design of the UA and the capabilities of the battle command network. The analysis begins with the organizational design of the UA.

The UA's battle command system will use two separate MCGs and a TAC-CP. There are two concerns due to the different organizational design. These two concerns focus on the ALO's position as a member of the commander's special staff. First, is there a change in the ALO's duties due to the different organizational design? Second, will there be a need for more than one ALO to maintain a presence in the MCGs as well as the TAC-CP to support the UA as a member of the commander's special staff?

First, is there a change in the ALO's duties attributable to the organizational design? While the MCG/TAC-CP physical structure is different, there is really no significant change in the types of cells or the types of staff positions supporting the UA commander. Most of the changes in the types of cells fall along the lines of the continuing sophistication of the current force due to increased capabilities. An example of this would be the evolution of fires to fires and effects. However, can today's ALO support the UA?

From the criteria established in Chapter One, today's ALO was determined to be suitable and acceptable, however, feasibility was identified as a problem. Feasibility was defined as "The unit must have the capability to accomplish the mission in terms of available time, space, and resources."¹³⁰ In this case, the ALO must have the necessary time, space, and resources.

¹³⁰ U.S. Department of the Army. Field Manual 5-0 Army Planning and Orders Production Final Draft. Washington, D.C.: Headquarters, Department of the Army, 2002, 3-23.

An analysis of both the MCG and TAC-CP configurations reveal no position for the ALO. Omitting a duty position is not critical unless there is no additional workstation to accommodate the addition of the ALO. Due to the networked nature of the UA, an inability to access the network means marginalizing that individual's duties. If a workstation is not created, then the MCG and the TAC-CP, in their present configurations, do not support an ALO because there is no physical workspace for the ALO to access the battle command system.

The second concern under the battle command organizational design was whether there would be a need for increased ALO manning due to the MCG and TAC-CP structure. In a current force brigade, the brigade ALO as a member of the command group, moves with the brigade commander.¹³¹ Even with the brigade ALO moving with the command group, there is still TACP representation in the brigade main and tactical command posts.¹³² Therefore, the current air support manning at the brigade level is sufficient for the UA. So, current ALO manning to a brigade is considered suitable, feasible and acceptable for an UA as well. Besides the different organizational design, the second significant difference was in the increased capabilities of the UA's battle command network.

The two most significant attributes of the UA's battle command network are the ability to collaborative plan and the increased situational awareness from sensor integration. Robust collaborative planning especially in a joint, interagency or multi-national environment, requires liaisons and the ability to link to other organizations. Under these circumstances, the ALO would be an important member of the planning staff. However, does the current ALO meet requirements? As a subject matter expert and a liaison to other joint military planners, the ALO fulfills the same role for the UA as for the current force. The overriding concern is whether any

¹³¹ Air Warfare Center Directorate of Tactics. *AFTTP 3-1, Volume 26 Theater Air Control System*. (Unclassified Extract) Nellis AFB, NV. Air Warfare Center Directorate of Tactics, 2003, 5-8.

¹³² Ibid, 5-8.

one person has the resident expertise and experience to collaboratively plan with not only joint, but interagency or multi-national organizations as well. However, this is mitigated by the robust reachback support capability inherent in the network. Ultimately, the question becomes whether the current ALO's knowledge level is suitable, feasible and acceptable to be able to effectively collaboratively plan using the UA's battle command network?

Assessing a future potential for increased training or knowledge level is difficult. However, an assessment can be made of the current curriculum of the Air Liaison Officer Qualification Course (ALOQC) taught at the Air Ground Operations School. The ALOQC emphasizes liaison and integration of joint assets.¹³³ The current program does not include interagency or multi-national coordination training. From this assessment, the current ALO's knowledge level is assessed as unsuitable for the UA, because of the inability to collaboratively plan with interagency or multinational organizations if required.

As for the increased situational awareness from sensor integration, the assessment was that in all aspects, the current ALO would accommodate well to the benefits of the SIAP and the COP. This means that from battalion to corps, the TACP would not hinder the timely integration of air support. This leads to the next functional category, fire support.

FIRE SUPPORT

The concept of Networked Fires means a virtual automation of fires under circumstances dictated by the commander. The assessment is that the roles of the TACP would be very similar to their present day roles. The ALO would primarily liaison and the ETAC would still primarily control aircraft. This discussion begins with the ALO.

¹³³ U.S. Department of the Air Force, *Syllabus: Air Liaison Officer Qualification Course (ALOQC)*. Langley AFB, VA: Air Combat Command, 2001, 7.

The ALO's role in the Networked Fires system would be to integrate air effectively into the fires and effects plan to enable some level of automation based on the commander's direction. How much automation effective integration can provide to a non-organic asset is a valid concern, but beyond the scope of this monograph. The assessment focuses only on whether today's ALO can provide effective integration of air into the UA's fires and effects plan. The assessment, based on an analysis of the three criteria, is that today's ALO can be an effective liaison in planning the most effective use of air in support of the UA. This planning would need to consider both automated and man-in-the-loop procedures, but in both situations, the level of knowledge is well within the capabilities of today's ALO. This ability to plan for the use of air support is further supported by the expectation that the integration of sensors to shooters is expected to span from theater assets to tactical assets.¹³⁴ This sensor to shooter connectivity is also instrumental in the execution of fires and effects.

The primary form of executing Networked Fires will be an automated one; however, in certain circumstances of the Networked Fires concept there is still a requirement for a man-in-the-loop. With respect to air support, whether in close proximity to friendly forces or not, the man-in-the-loop has traditionally been the ALO or more often the ETAC. The need for the ETAC is due to the complexity of controlling aircraft and the fears of fratricide.

Due to the Networked Fires and land warrior concepts, identification of all friendly soldiers on the battlefield reduces the risk of fratricide. Therefore, any controls outside of close proximity to friendly forces that require man-in-the-loop procedures could be executed by anyone in the fires and effects cell. However, when man-in-the-loop procedures are necessary and the target is within close proximity to friendly forces, there is still cause for concern. Today's ETAC

¹³⁴ U.S. Department of the Army. *TRADOC Pamphlet 525-3-0.1 The United States Army Objective Force Battle Command (C4ISR) Concept*. Ft Monroe, VA: U.S. Army and Training and Doctrine Command, 2002, 79.

is trained to control aircraft in close proximity to friendly forces. Therefore, today's ETAC would be able to support man-in-the-loop procedures within close proximity of friendly forces for the UA. However, before concluding that both roles within the current air support TACP are acceptable to the UA, two more issues with respect to the execution of air support needs to be discussed.

The first issue has to do with "direct access" to fire delivery systems and down to what level this is required to provide "responsive effects on demand."¹³⁵ The second issue has to do with man-in-the-loop procedures. As discussed in Chapter Three, "the expeditious application of Joint capabilities at the lowest tactical echelon" is required.¹³⁶ However, the UA documents do not specify at what tactical echelon or specifically what is required for man-in-the-loop procedures. These requirements are derived. The lowest echelon that *TRADOC Pamphlet 525-3-90* indicates is capable of employing joint fires is the combined arms battalion.¹³⁷ From this source, the derived requirement for the lowest tactical echelon will be the combined arms battalion.

For the man-in-the-loop procedural requirement, the derived requirement is a combination of current ETAC operating procedures and the sensor network of the UA. Current ETAC operating procedures categorize controls into three types of terminal attack control including accounting for "associated risk."¹³⁸ These three control types also allow for increased

¹³⁵ The phrase "direct access" is from: U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 4-59. The phrase "responsive effects on demand" is from: U.S. Department of the Army. *TRADOC Pamphlet 525-3-0.1 The United States Army Objective Force Battle Command (C4ISR) Concept*. Ft Monroe, VA: U.S. Army and Training and Doctrine Command, 2002, 80.

¹³⁶ U.S. Department of the Army. *Operational Requirements Document for the Future Combat Systems*. Ft Knox, KY: Unit of Action Maneuver Lab, 2002, A-16.

¹³⁷ U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 3-13.

¹³⁸ Joint Chiefs of Staff. *Joint Publication 3-09.3 Joint Tactics, Techniques and Procedures for Close Air Support (CAS)*. Ft Monroe, VA: Joint Warfare Center, Doctrine Division, 2003, V-14.

capability due to technology including sensor technology.¹³⁹ Therefore, current procedures for controlling air allow for the increased capability of the UA's sensor network. In fact, the UA's ETAC will have even more SA in controlling air support with minimal risk.

The derived requirement for what tactical echelon the UA require responsive fires and effects is the combined arms battalion. The derived requirements for acceptable man-in-the-loop procedures are sensor-aided awareness of the target, delivery platform and friendly forces. Under these derived requirements, the assessment is that the current air support ETAC Manning and level of expertise are suitable, feasible and acceptable. However, if man-in-the-loop control is required at a tactical echelon below the combined arms battalion, or sensor-aided man-in-the-loop control of aircraft is insufficient, then in either circumstance the criteria of acceptability is potentially violated not because of expertise, but because of lack of manning. This point is emphasized because the UA requirements in this instance were derived. The ability to enable a future requirement by relying on the networked sensor capability of the UA is indicative of how different the UA is to a current force brigade in capability. Another instance where these differences are readily apparent is in the functional category of AC2.

AIRSPACE COMMAND AND CONTROL

The UA airspace will be a very busy area filled with organic and joint assets. Because of this intense airspace environment, the UA will have unprecedented AC2 capabilities. The UA also has a potentially large combat radius, especially in a non-contiguous environment. By combining the two realities of the busy airspace and the large combat radius, a situation where more control of air assets than the TACP can provide occurs. This is not so much a factor of the numbers of joint assets available, but of the numbers of organic users within the airspace and the

¹³⁹ Joint Chiefs of Staff. *Joint Publication 3-09.3 Joint Tactics, Techniques and Procedures for Close Air Support (CAS)*. Ft Monroe, VA: Joint Warfare Center, Doctrine Division, 2003, V-14, V-15.

need to deconflict these assets from each other and the joint assets as well. This situation could be further exacerbated if an immediate need for combat power by joint air assets is needed.

These notional situations create a potential problem at the UA level that in the current force is normally addressed at the level of a corps.

There appears to be a need for the TACP on a transitory basis and on a smaller scale, to be able to do some of the duties of the Exec Ops and C2 Operations cells of an ASOC. More specifically, the UA TACP would most likely need to maintain a status on availability of air resources, match air assets to requests and provide procedural control of air assets during times of concentrated air support. The assessment is that this type of situation is likely, given the emphasis on non-contiguous operations and the desire to integrate joint fires and effects into the UA scheme of maneuver. However, establishing this requirement does not assess whether the current air support TACP can accomplish this expanded role.

The assessment of the TACP's ability to accomplish the functions described above needs a specific requirement. The derived requirement will be whether the TACP can deconflict and integrate joint air assets into an UA's airspace effectively. Starting with an assessment of suitability, the assessment is that today's TACP would be overtasked to accomplish the mission even with the support of the UA's AC2 component. This assessment is made on the basis of the significant differences between the duties of a FDO and an ALO. This is further supported by assessing the feasibility of the TACP fulfilling the derived requirement. The TACP is not properly resourced to do the role of an ASOC even on a transitory basis. Maintaining situational awareness of the ASOC specific duties would hinder the accomplishment of normal TACP support to the commander without additional resources. As far as acceptability is concerned, the assessment is that an unacceptable situation occurs because of the advantage lost by having the TACP do double duty, even if temporarily. So, there is a cumulative assessment based on all three criteria that indicate that the TACP is not suited for ASOC Ops cell duties even temporarily. This was a simple analysis that did not explore the potential of merging the TACP and AC2

components into an ASOC-like organization to provide more effective air support to the UA. However, this merging of capabilities and duties is not present in the current air support system and is more appropriately discussed in the next chapter along with the other recommendations.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this monograph was to examine a portion of the FF, the UA, to analyze what kind of air support system the UA required. The issue was that the current air support system could prove inadequate to the needs of the UA and more generally to the FF as a whole. The hypothesis was that the current air support system could meet the needs of the UA. The prior chapters have developed a better understanding of the current air support system, characteristics of the UA pertinent to air support and an analysis of whether the current air support system could meet the requirements of the UA.

The purpose of this last chapter is to summarize the findings and provide recommendations to any identified shortfalls. The format for presenting the findings will follow the same format of the last chapter, relying on the three functional categories established in Chapter Two to categorize the findings. These functional categories are battle command, fire support and airspace command and control.

BATTLE COMMAND

The first identified shortfall was assessed to be that there was no physical location for the ALO within the design of the UA's MCG or TAC-CP. Since the UA is planned to be a networked and therefore integrated system, access to the network is essential. This violated the criteria of feasibility. However, the remedy to this problem is simply to add a physical position for the ALO within the MCG or TAC-CP. Based on the current force brigade, the recommendation is that a position for a TACP member be added to both the MCGs and the TAC-CP. Specifically, this allows the brigade ALO to travel with the command group in one MCG. Another ALO could support the second MCG and additional members of the TACP could then remain at the TAC-CP and integrate with the FEC.

As a consequence of the UA's unprecedented interoperability from Joint, Interagency and Multinational organizations, the battle command structure needs to consider how much liaison or access these additional organizations may need within the UA's battle command organizational design. As long as the UA is considered a brigade equivalent, then the ALO is probably the most significant omission. However, if the UA can act as an ARFOR for a JTF, then the capacity to provide a more robust battle command structure may be necessary. This concern requires more study to ascertain whether the planned UA has the capability to accommodate additional users in order to create a more effective battle command.

The second identified shortfall was assessed to be the knowledge level of the current ALO and that individual's ability to collaboratively plan across organizational lines that include interagency and multinational organizations. This shortfall is probably not just limited to the ALO on the commander's staff; however, the ALO as the link to the air support system is of primary concern to this study.

The most realistic remedy to this shortfall is training. Inherent in the battle command network is the reachback support and the decision-making tools to assist all members of the battle staff to plan more effectively. However, the need for more training to better prepare personnel assigned as ALOs to the FF is still necessary in order to be able to operate more effectively within the UA whether individually or in a more collaborative environment enabled by the UA's reachback capability.

FIRE SUPPORT

The most significant finding under Fire Support is that there needs to be a more detailed assessment of the UA Networked Fires concept. Specifically, the man-in-the-loop operating concept needs better analysis for requirements. There is a significant reduction in assessed risks due to automated fires and the land warrior concept, but ultimately, who is qualified to do man-in-the-loop fires within close proximity to friendly forces? This was not identified as a shortfall

in Chapter Four because the assumption was made that the ETAC would do man-in-the-loop controls within close proximity to friendly forces. However, will the UA require anyone else to do man-in-the-loop controls and under what circumstances?

The UA documents also do not specify at what tactical echelon a man-in-the-loop may be required. A fully integrated network is going to provide some increased flexibility not available in today's systems. The goal is effects on demand. Does this mean qualified controllers down to the company level? And do these controllers need to be Air Force ETACs. Or can this historical requirement be mitigated or reduced due to the automation of the network.

Procedurally, there can be a substantial advantage gained by using the sensors networked together within the UA to enable situational awareness of the target, the delivery platform and of friendly forces. Whether this form of sensor derived clearance of fires is acceptable when in close proximity to friendly forces needs further study. If this is assessed as being an acceptable revision to current procedures, then better responsiveness is enabled. Ultimately the issue comes down to who does it, at what echelon do they do it, how do they do it procedurally?

AIRSPACE COMMAND AND CONTROL

Identified in Chapter Four was the derived requirement for the TACP to perform some of the duties of an ASOC even temporarily. What was apparent from the analysis of Chapter Four is that the current TACP cannot adequately accomplish the derived requirement. Before addressing a recommended solution to this problem, two stipulations from the *Operational Requirements Document for the Future Combat Systems* help to provide guidance for a recommended solution.

First, the *Operational Requirements Document for the Future Combat Systems* states "Some MOSSs may be combined to create new MOSSs."¹⁴⁰ Second, "More focus on the integration

¹⁴⁰ U.S. Department of the Army. *Operational Requirements Document for the Future Combat Systems*. Ft Knox, KY: Unit of Action Maneuver Lab, 2002, 62.

with the joint environment will also determine change. Integration of joint sensor and fires management into the UA may require proponents to identify additional training and skill identifiers to integrate these systems.¹⁴¹ From these two quotes comes the basis for the recommendation for the last identified shortfall.

First, the duties of the ALO and the FDO need to be integrated into one specialty that can work effectively under either sets of conditions, a TACP or an ASOC. Second, there should be additional analysis done on the potential gains of merging the duties of the ASOC with the Army AC2 component. With the ability to do positive control within their own area of operations, the Army AC2 component has an extremely robust capability that if integrated with a TACP familiar with ASOC operations could create a synergistic effect and a much better integration of Army and Air Force air assets.

Ultimately what both the merging of the ALO and FDO duties as well as the merging of the ASOC and Army AC2 duties identifies, was introduced at the beginning of *TRADOC Pamphlet 525-3-90*. The FF is streamlining the organizational construct of the traditional Army units from battalion to corps into UAs and UEs. However, in the case of air support, there is a potential to streamline the organizational construct of both the Air Force air support duties as well as the integration with the Army in order to provide a more effective organizational structure.

CONCLUSION

Identified were three shortfalls and one area of concern in the current air support system's ability to provide adequate support to the UA's requirements. In assessing the monograph's hypothesis, the analysis of Chapter Four indicates that the hypothesis was invalid. The current air support system cannot meet the needs of the UA.

¹⁴¹ U.S. Department of the Army. *Operational Requirements Document for the Future Combat Systems*. Ft Knox, KY: Unit of Action Maneuver Lab, 2002, 62.

The invalidation of the hypothesis is not surprising. However, the hypothesis did provide a basis for analyzing the UA's requirements. From this perspective, it becomes apparent that the Army's transformation is going to create an Army organization that is going to have air support requirements that the current Air Force air support system cannot meet. What this indicates is that some type of parallel change of the current air support system to meet the needs of the FF is necessary.

Ultimately, this requirement to provide air support to the FF is what will drive change in the current system. The impetus for this change is an awareness of the limitations of the current air support system in providing air support for the future. This awareness would then drive a methodical and integrated evolution of the current air support system to match the transforming Army. The danger is that the impetus for change will be in reaction to a dismal battlefield performance by the Air Force organization left in place to provide that air support.

APPENDIX

UNARMED AERIAL VEHICLES (UAV) IN THE UNIT OF ACTION

System Class (Total Systems in the UA)	Operational Radius	On Station Time	Operating Altitude AGL (MSL*)	Allocation
UAV (CL I) (54 Systems)	8 km (T) 16 km (O)	50 min (T) 90 min (O)	500 ft. AGL (10,500 ft MSL)	1 x IN Plt (18) 3 x Recon Plt (27) 1 x Cannon Plt (6) 1 x FSB Co (3)
UAV (CL II) (36 Systems)	16 km (T) 30 km (O)	2 hours (T) 5 hours (O)	1000 ft AGL (11,000 ft MSL)	3 x IN Co (18) 3 x MCS Co (18)
UAV (CL III) (12 Systems)	40 km (O)	6 hours (T) 10 hours (O)	2000 ft AGL (12,000 ft MSL)	3 x Recon Trp (9) 3 x NLOS Bn (3)
UAV (CL IVa) (2 systems) UAV (Class IVb)	75 km (O) 400 km** (O) **Limited duration	18 –24 Hours	Minimum of 6,500 ft AGL (16,500 ft MSL)	2 x AVN SDN (2)

* MSL Altitude assumes a baseline MSL altitude of 10000 ft

"The UA has a significantly greater ISR capability than any brigade sized element ever fielded by the US Army."¹⁴² There are four classes of UAVs in the UA. UAV Class (CL) I is used up through company level.¹⁴³ It is a small system used "to enhance SA, performing reconnaissance, limited surveillance, and limited (short endurance time) communications relay

¹⁴² U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3.* Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 4-32.

¹⁴³ Ibid, 3-53.

for the unit.¹⁴⁴ UAV CL II is also used up through company level.¹⁴⁵ The CL II UAV has increased capabilities over the CL I to include target acquisition and designation and the ability to hover or loiter over an area for an extended period.¹⁴⁶ The CL III UAV is a battalion level asset or reconnaissance troops within a combat arms battalion. The CL III UAV has all the capabilities of the previous two classes with a more robust targeting and command, control, communications and intelligence (C3I) capability.¹⁴⁷ The CL III UAV can also detect mines; detect chemical, biological, radiological, nuclear (CBRN) elements and can do meteorological surveys.¹⁴⁸ The CL IV UAV is a brigade level asset and is organic to the Aviation Squadron.¹⁴⁹ There are two variant of the CL IV UAV, the IVa and IVb. The CL IVa UAV will normally team with the Comanche helicopter.¹⁵⁰ The CL IVb UAV "will provide the UA its necessary communications relay and persistent staring functions throughout its domain."¹⁵¹ Both CL IV UAVs will be able to search, reconnoiter and detect CBRN.¹⁵²

¹⁴⁴ U.S. Department of the Army. *TRADOC Pamphlet 525-3-90 O&O The United States Army Objective Force Operational & Organizational Plan Maneuver Unit of Action, Change 3*. Ft Knox, KY: Unit of Action Maneuver Battle Lab, 2003, 3-53.

¹⁴⁵ Ibid, 3-53.

¹⁴⁶ Ibid, 3-53.

¹⁴⁷ Ibid, 3-53.

¹⁴⁸ Ibid, 3-53.

¹⁴⁹ Ibid, 3-54.

¹⁵⁰ Ibid, 3-54.

¹⁵¹ Ibid, 3-54.

¹⁵² Ibid, 3-54.

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